# Rajalakshmi Engineering College

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## NeoColab_REC_CS23231_DATA STRUCTURES

## REC_DS using C_Week 6_COD_Question 5

Attempt : 1
Total Mark : 10
Marks Obtained : 0

## Section 1 : Coding

1. Problem Statement

Jose has an array of N fractional values, represented as double-point numbers. He needs to sort these fractions in increasing order and seeks your help.

Write a program to help Jose sort the array using the merge sort algorithm.

### Input Format

The first line of input consists of an integer N, representing the number of fractions to be sorted.

The second line consists of N double-point numbers, separated by spaces, representing the fractions array.

### Output Format

The output prints N double-point numbers, sorted in increasing order, and rounded to three decimal places.

Refer to the sample output for formatting specifications.

*Sample Test Case*

Input: 4
0.123 0.543 0.321 0.789
Output: 0.123 0.321 0.543 0.789

*Answer*

```c
#include <stdio.h>
#include <stdlib.h>

#include<stdio.h>
#include<stdlib.h>
void merge(double arr[], int left, int mid, int right){
    int n1 = mid - left + 1;
    int n2 = right - mid;
    double L[n1], R[n2];
    for(int i=0; i < n1; i++){
        L[i] = arr[left + i];
    for(int j=0; j < n2; j++){
        R[j] = arr[mid + 1 + j];
    int i = 0, j = 0, k = left;
    while(i < n1 && j < n2){
        if(L[i] <= R[j]){
            arr[k++] = L[i++];
        } else{
            arr[k++] = R[j++];
        }
    }
    while(i < n1) {
        arr[k++] = L[i++];
    }
    while(j < n2){
        arr[k++] = R[j++];
    }
}
```

```c
void mergeSort(double arr[], int left, int right) {
    if(left < right) {
        int mid = (left + right) / 2;
        mergeSort(arr, left, mid);
        mergeSort(arr, mid +1 , right);
        merge(arr, left, mid, right);
    }
}
int main() {
    int n;
    scanf("%d", &n);
    double fractions[n];
    for (int i = 0; i < n; i++) {
        scanf("%lf", &fractions[i]);
    }
    mergeSort(fractions, 0, n - 1);
    for (int i = 0; i < n; i++) {
        printf("%.3f ", fractions[i]);
    }
    return 0;
}

int main() {
    int n;
    scanf("%d", &n);
    double fractions[n];
    for (int i = 0; i < n; i++) {
        scanf("%lf", &fractions[i]);
    }
    mergeSort(fractions, 0, n - 1);
    for (int i = 0; i < n; i++) {
        printf("%.3f ", fractions[i]);
    }
    return 0;
}
```

*Status :* Wrong                                      *Marks : 0/10*